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When a local station “dies”, how can one recover it? A procedure must be developed that can be followed by any number of people with only a minimal acquaintance with local station hardware and software. Let us here assume that a station is not working, and it is important to be able to get it back into service as quickly as possible. Possible problems that can exist are too numerous to itemize *fully*, so a basic and reliable starting point must be defined. Assume one starts with a working VME crate, including MVME-133A cpu board, crate utility board, arcnet interface board, token ring network board, and a nonvolatile memory board. Since what is wrong may be the contents of the memory board—not easily verified for total correctness—assume that a generic memory board is available “off-the-shelf.” This note is to be developed into a procedure for restoring a generic memory board to work as the installed one did before.

### ***Generic nonvolatile memory board***

Given a board base address of 100000, at location 120000 is normally stored the contents of the operating system code. At location 13E000 is stored the pSOS operating system kernel. This allows for up to 112K of system code, plus 8K of kernel. (At this writing, the size of the system code is about 81K.) The generic board should have this entire space cleared, so that upon reset, a PROM copy of the system code will be entered. (This PROM copy is based at FFF04000.)

Assume that the table directory has already been prepared properly for any Linac local station. The lo byte of the node# is taken from the byte of address switches on the crate utility board. The hi byte is 06 for any Linac local station. (A byte value of 05 is used for diagnostic stations, and 07 is used for D0 stations.) To change the hi byte value via the network means changing the byte at 105046. Once this is done, however, the station should be **reset** to activate the new node#.

Assume that the entry in PAGEP for Page T already points to the PROM-based token ring initialization page application at FFF1A000. This will cause the station to open onto the token ring network after a **reset**.

Assume that an IPARP table already exists for this generic memory board. The only unknown field is the IP address at 10E010. This can be temporarily preset to an IP address that is not normally used. (We assume here that only one such instance of a generic node will be operating at once.) Maybe this could be 131.225.129.9, or 83E1 8109. Note that all token ring nodes at Fermilab use subnet 129, so that their IP addresses are of the form 131.225.129.yyy, or 83E1 81xx. To set the IP address correctly,

Assume that the generic board already has been loaded with the 09xx table of Acnet IP addresses. This allows the 09EA parameter of the AERS local application to access node OPER via IP to acquire the logical-physical node address table used in Acnet for communication with other Acnet nodes.

How can we determine the correct 09xx for the node that is being initialized? It is stored at 10507E. After changing it, **reset** the station to activate it.

Use the Page G remote access from some host to “log in” to another local station, such as node 0508. Run Page D on that node—in the copy mode—to load up the newly-configured station with local applications and page applications needed by that station. Perhaps we need to keep a record of those needed by each station, along with the parameter values for specific instances of local applications. From a saved memory board file, this information can be extracted.

Many other parameters can already be installed in the generic memory board. These include the token ring group and functional group addresses for reception at 105048, the token ring group addresses for transmission at 105B80, the ‘AR’ key at 105032 needed to activate use of arcnet, and the data stream table entries for network frame diagnostics and setting log diagnostics.

### ***Reference for saved memory information***

In order to provide a proper backup for restoration of the nonvolatile memory board, a copy of it should be saved periodically. From the table directory, one can find out the location of all system tables. The contents of most of these tables can be downloaded to complete the restoration of the system. The procedure for handling restoration of the tables is usually, but not always, simply targeting the generic board with the saved contents of all tables. But some tables need to be treated with special care. See the related document *System Tables and Their Uses* for more details.